DOCUMENT RESUME

ED 366 818 CE 065 732

AUTHOR Ascher, Carol; Flaxman, Erwin

TITLE A Time for Questions: The Future of Integration and Tech Prep. A Report of a Three-Day Summit (Washington, D.C., June 27-29, 1993).

INSTITUTION Columbia Univ., New York, NY. Inst. on Education and the Economy.

SPONS AGENCY Ford Foundation, New York, N.Y.; National Center for Research in Vocational Education, Berkeley, CA.; Office of Vocational and Adult Education (ED), Washington, DC.

PUB DATE Nov 93

NOTE 24p.

AVAILABLE FROM IEE Publications, Institute on Education and the Economy, Teachers College, Box 174, Columbia University, New York, NY 10027 ($5 pre-paid).

PUB TYPE Collected Works - Conference Proceedings (021)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS *Academic Education; *Articulation (Education); *Change Strategies; Counseling Techniques; Educational Change; Educational Environment; Educational Needs; Educational Objectives; Educational Policy; High Schools; *Integrated Curriculum; Needs Assessment; Partnerships in Education; Politics of Education; Professional Development; *Program Implementation; School Business Relationship; School Counseling; Standards; Track System (Education); Two Year Colleges; *Vocational Education

IDENTIFIERS *Tech Prep

ABSTRACT

A 3-day summit of researchers, policymakers, administrators, practitioners, and other concerned individuals examined the organizational, instructional, and political problems in implementing integration and tech prep (I/TP) programs. The following propositions emerged from the discussions: (1) I/TP face numerous structural and professional obstacles; (2) historic division of high schools into classes for college- and noncollege-bound students impedes the promise of I/TP to end tracking; (3) full partnership of business/industry in workplace learning is critical to its success; (4) new standards and evaluation tools are required for I/TP to demonstrate success; (5) new strategies for professional development must be created to support I/TP; (6) I/TP change guidance and counseling practices; and (7) I/TP can be either facilitated or hindered by the policy and political environment in which they are implemented. Included among the recommendations for facilitating I/TP were calls to communicate the vision of curriculum I/TP, link I/TP to other reforms, demonstrate how students can profit from good I/TP programs, create a new assessment and credentialing system, develop new collaborative forms of research, clarify the possibilities of the workplace as an instructional site, and create a supportive policy environment. (Appended is a list of summit participants.) (MN)

ED 366 818

Summit Report

A TIME FOR QUESTIONS

The Future of Integration and Tech Prep

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Institute on Education and the Economy
Teachers College, Columbia University

CE 065 732

BEST COPY AVAILABLE

A TIME FOR QUESTIONS

The Future of Integration and Tech Prep

A Report of a Three-Day Summit
sponsored by the
Institute on Education and the Economy
and the
National Center for Research in Vocational Education
June 27–29, 1993, Washington, D.C.

Carol Ascher and Erwin Flaxman

Institute on Education and the Economy
Teachers College, Columbia University
New York, New York 10027

November 1993

Preface

The summit meeting summarized in this document was sponsored by the National Center for Research in Vocational Education (NCRVE), University of California at Berkeley, and the Institute on Education and the Economy, Teachers College, Columbia University. It was jointly funded through a grant to NCRVE from the Office of Vocational and Adult Education, U.S. Department of Education, authorized by the Carl D. Perkins Vocational Education Act, and through a grant to the Institute on Education and the Economy from the Ford Foundation.

The preparation and dissemination of the summit report was supported by the Ford Foundation.

The National Center for Research in Vocational Education is a consortium of institutions conducting research on vocational and work-related education and providing a variety of technical services. The consortium is led by the University of California at Berkeley, and includes the RAND Corporation, Virginia Polytechnic Institute and State University, the University of Illinois, the University of Minnesota, the University of Wisconsin, and Teachers College, Columbia University.

A TIME FOR QUESTIONS
The Future of Integration and Tech Prep

INTRODUCTION

This document summarizes a three-day summit sponsored by the Institute on Education and the Economy at Teachers College, Columbia University, and the National Center for Research in Vocational Education to take stock concerning two fundamental secondary school reforms: tech prep and the integration of academic and vocational education. During the three days, discussions among members of the National Center on Research in Vocational Education (NCRVE), officials of the U.S. Department of Education and state governments, local school administrators, trainers, youth advocates, educational practitioners and other concerned individuals considered the organizational, instructional, and political problems in implementing integration and tech prep programs. Professional and public concerns about these reforms, and the necessary policies for realizing their substantial educational value, were also part of the agenda.

The summit was held at the very moment when public officials of the Clinton Administration were formulating a national school-to-work initiative. It was the concerted belief of all the participants that the principles and practices of both integration and tech prep are key components of the school-based part of such an initiative: it was in this spirit that they attended the summit.

Although both the integration of academic and vocational education (generally called curriculum integration, or merely integration) and tech prep can be considered secondary school as well as postsecondary education reforms, the focus of the meeting, and so this document, was largely on secondary school reform. Thus, from the point of view of the summit discussions, the key players in implementing the reforms are academic and vocational teachers, secondary school principals, secondary school counselors, administrators and supervisory personnel, and employers and other representatives from the world of industry and business.

Several suppositions lay behind the summit an1 the current document.

One, properly instituted, curriculum integration and tech prep are essential parts of a national education and training system and a school-to-work transition which prepare *all* students for work. That is, neither curriculum integration nor tech prep are designed solely for vocational students, the "middle 50 percent," the "noncollege-bound" or any other group traditionally thought of as having modest ability. When both programs are made sufficiently rigorous and attractive, college bound students can also profit from this demanding high school program.

While curriculum integration and tech prep programs can be instituted in a way that eliminates tracking, care must be taken that the curriculum, instruction, and organizational practices in these programs should also be appropriate for special populations such as handicapped students, pregnant teenagers, minority students (including limited-English-speakers), and students in under-funded and over-taxed school districts. This can be done by attending to students' diverse learning styles, to teaching techniques that have proven successful with different students, and to the influence of social circumstances on learning.

Two, curriculum integration and tech prep are not additional programs to be added to the smorgasbord of programs currently in the high school curriculum. Implementing the principles and practices of curriculum integration and tech prep call for fundamental systemic change—in the organization of academic and vocational departments and course sequences, in curriculum frameworks, in teacher collaborative behaviors, in teacher education, in assessment practices, and in credentialing, to name but a few.

Three, as fundamental school reforms, curriculum integration and tech prep share philosophies and approaches with other contemporary school reforms. Among these are moves to professionalize teaching; to make pedagogy more active, student-centered, and contextual (rather than didactic and teacher-centered, as is most common); to extend curriculum integration into elementary and middle schools; to replace standardized testing with authentic assessments; and to restructure large secondary schools into smaller units with greater curricular integrity. However, while most other reform strategies ignore the relationship of schooling to work, the principles of curriculum integration and tech prep, properly articulated with the general principles of school reform, clearly make this connection.

Four, integration and tech prep are inextricably connected to the new school-to-work initiatives and proposals for establishing youth apprenticeships. School-to-work initiatives make little sense in a conventional "academic" high school. To succeed, efforts to link work-based learning with school learning may require an integrated curriculum in the high school and, where appropriate, in the community college as well.

Finally, however much we develop curriculum integration and tech prep as a national educational reform, as strategies they should be implemented according to local needs and conditions. To that end, this document asks what fundamental propositions must direct policy, regulations, implementation, and the service delivery of integration and tech prep. And it suggests the critical issues to consider as the nation begins to formulate a school-to-work educational and training policy.

INTEGRATION AND *TECH PREP* IN BRIEF

An explanation about the nature of curriculum integration and tech prep may help clarify the discussion that follows. Both reforms alter curriculum and

instruction, and both can restructure schools and change the relationship of schools to community colleges and the workplace. Both reforms have also been given new energy by the Carl D. Perkins Vocational and Applied Technical Act of 1990, which, by mandating that states have plans for both integration and tech prep, has created the potential for dramatic reform of vocational education.

The Integration of Vocational and Academic Education, or integration, is not vocational education by another name. Rather, it eliminates the distinction between abstract (academic) and functional (vocational) education by constructing course work and course sequences in which all students achieve both academic and technical competencies and generic skills, in what can be called "work-related education."

Although the idea of curricular integration is not new, the renewed interest in integration has been spurred by new cognitive science research, as well as by a recognition that neither vocational nor academic education as currently practiced provides students with the problem-solving and interactive learning skills required by further education, the economy, and social life. Thus, curricular integration reforms job-specific vocational education by bringing out the intellectual and moral content of a range of occupations, providing students with employability skills and the knowledge to direct their own futures in any one of related careers. At the same time, it transforms academic education, making the teaching of traditional academic subjects more active, more directly meaningful, and more connected with out of school experience.

Such learning also changes the role of the teacher. In an integrated classroom, the teacher uses far fewer didactic methods of instruction, and much more frequently structures and supports learning by acting as a coach, advisor, or resource for the student, becoming involved or withdrawing from the student's work as needed. In a fully operational integration program, the teacher also works with other teachers in a number of ways: teachers collaborate in curriculum planning, materials development, and the coordination of instruction. In fact, teacher collaboration accompanied by changes in the organization of courses, course sequences, special student projects, and whole schools are essential to the implementation and success of integrated programs.

Integration programs also involve the business community, which provides employment, ideally related to course work, and helps formulate a curriculum that develops the competencies needed for the students' future occupations.

Integration is viewed as a solution to a number of specific educational, social, and economic problems. School reformers consider curriculum integration as a way of making academic learning more available and meaningful to all students, especially to those who lack basic academic and higher-order thinking skills. Cognitive scientists support the concept of integration because it is based on recent findings that most people learn abstract or theoretical concepts most easily under contextualized or applied conditions. Both vocational educators and the critics of vocational education see integration as a way of improving the academic content of vocational courses and better preparing students for a workplace with

7

greater and more rapidly changing demands. Federal legislators view integrated education as a means of helping students develop the technological skills to function in a competitive world economy. Employers support integration because it can provide students with the problem-solving skills they will need to function in the high-performance workplace. Social critics see integration as a strategy for distributing educational resources more equitably so that all youth have a better chance at an economic future.

Tech Prep is an organizational and curricular reform for preparing students, ideally, for high tech careers whose entry point is graduation from a community college. Tech prep engages students in four-year (2+2) or six-year (4+2) programs, which give them the competencies (knowledge, skills, and values) required for such careers. The completion of the tech prep program leads to an associate degree or a two-year certificate from a community college.

As a structural and organizational reform, through articulation agreements, tech prep aligns academic and vocational course work into a common core at the secondary school and community college level. As a curriculum reform, it applies the principles and strategies of curriculum integration: the content of the course work consists of applied academics, courses that incorporate applications and experienced-based knowledge into academic matter, and vocational courses that are broadened and deepened by intellectual content.

Collaboration with the business community is also a critical part of tech prep. It ensures that the curriculum is in line with the demands of the workplace, and it makes work-experience opportunities more possible for students at all stages of the program. Although tech prep is commonly viewed as the technical education alternative to the college preparatory program, its graduates can be prepared to enter four-year colleges as well as community colleges, technical institutes, and the workplace.

Articulation in tech prep programs—between high schools and postsecondary institutions and between high schools and the workplace—can have two significant benefits. First, it can coordinate different levels or systems of education to enable the learner to make a transition without delays, without a duplication of effort, or without a loss of credit. Second, it can arrange the curriculum so that students can choose more than one level of instruction, move to another without a gap or overlap in what they are learning, and enter the workplace to fill a job at their level of competence.

PROPOSITIONS FOR IMPLEMENTATION

The seven propositions that follow are drawn from discussions among summit participants. These propositions suggest areas of promise, conflicts, and barriers in the implementation of integration and tech prep.

1. Integration and tech prep face a number of structural and professional obstacles in meeting their instructional goal of an integrated academic and vocational curriculum.

Dewey's notion of "education through occupations" has been revitalized by recent research, which has called into question aspects of both academic and vocational learning as traditionally practiced. It shows that most students learn best when knowledge is made concrete and related to a clear goal or contextualized. Thus, academic instruction is regarded as too often abstract and ungrounded for optimal learning, and vocational instruction is seen as suffering from an emphasis on narrow occupational skills and technical methods at the expense of meaning. That is, while most academic instruction would benefit from "situated learning" and an organizing principle for information, ideals, and intellectual growth, vocational instruction would be enhanced by a grounding in the knowledge, intellectual skills, and moral habits that make a good worker and citizen, and in the "culture of practice" demanded by students' future occupations.

However, disciplinary boundaries remain strong, and teachers' fears of losing disciplinary identities are important barriers to curriculum integration. Thus, the solution may be not to demolish disciplinary divisions and erase teachers' subject identities, but to strengthen them in a new way. In fact, a strong subject background—whether it is academic or vocational—is a prerequisite for integration; traditional ways of teaching subjects can then be augmented by collaboration across disciplinary boundaries. For example, an analysis of both vocational and academic classrooms in comprehensive high schools suggests that a wide range of subjects, including interior design, English, electronics, architectural drafting, and manufacturing, can all be taught to impart such generic skills as complex reasoning, cooperation, and useful work-related attitudes (the ability to take responsibility, to figure something out, and to make bold decisions), along with domain-specific skills and knowledge.

The limited experience with curriculum integration has led some to believe that integration is easier with some subjects and tasks than with others. Mathematics, for example, is often assumed to be difficult to integrate. However, the problem with integration in mathematics does not stem from the subject matter. As with the literature component of English, history, and political science/civics or the other social sciences, the major obstacles to curriculum integration are the resistance of teachers, the effects of university admissions requirements, and state regulations that prescribe prerequisites and course sequences.

A more important cause for concern in curriculum integration has been the low level of academic proficiency demanded by the emerging curriculum materials, as well as the lack of rigorous evaluation of student outcomes. Unfortunately, regulations under the Perkins Act for using Federal funds for curriculum integration provide only weak incentives for developing high quality curriculum or

assessing what is developed. Lacking technical and financial resources, many schools have opted to use Federal money for smaller changes, like "applied academics," which conform to the law but show little evidence of success. If educators have a rich conception of integration and are willing to collaborate in developing curriculum, they will be less tempted to use glitzy but low-level materials in courses that do not expand students' learning.

If the integration of academic and vocational education is to occur, it will also require changes in a number of areas: pre-service education, in-service education, teacher credentialing, model curricula and curricula frameworks, achievement and exit exams, and other common manifestations of disciplinary divisions.

2. The historic division of the high school into classes for college-bound and noncollege-bound students makes the promise of integration and tech prep to end tracking difficult to achieve.

Integration programs have the potential to end the stratification of schooling into a college-bound track for students who are strong academically, and general, remedial, vocational and other tracks for academically weak students. These reforms replace the traditional tracks with new clusters or paths in which students of like occupational interests but of mixed academic abilities and previous academic attainments all learn together in preparation for career areas like health, business, electronics, or the arts.

Unfortunately, since most schools have long been used to separating college-bound and noncollege-bound students, they tend to direct integration and tech prep only to noncollege-bound students. However, these reforms are likely to fail unless *all* students are served by them. Directing integration and tech prep to the noncollege-bound student recreates the hierarchy that has plagued the traditional divisions between academic education and all other high school educational programs. It is this hierarchy that has turned vocational or general education teachers into second-class professionals and their courses, which are often plagued by outdated and insufficient materials, as dumping grounds for less academically successful students. Once students are tracked into a vocational or general track they are unlikely to be able to move out and thus to get enough academic course work for college entrance or for successful participation in the work world. This division also relegates the college-bound student to traditional academic classes with abstract learning, depriving them of career-focused, problem-centered, activity-based learning that is offered in the best vocational classes. At their best, these vocational classes use the catalyst of an occupational area to integrate technical knowledge for solving a problem with the principles and theories for understanding it.

Although there are good reasons to integrate the curriculum, the division between college-prep and general or vocational education is extremely strong in most high schools. Schools have long seen themselves as preparing a few students for the professional and managerial class, while training the large majority of

students for unskilled and semi-skilled careers. This has created a hierarchy of subject matter divisions, curriculum frameworks, and related assessments and appropriate teacher training—all strongly supported by teachers and administrators. What is more, many college-bound youth and their parents resist any reform that eliminates the traditional college preparatory course work. Given the nature of the academic requirements to enter college and college entrance examinations, this resistance may be well-founded. Thus, the successful institutionalization of integration and tech prep into schools across the U.S. will also depend on a revised system of assessment for college entrance. Finally, tech prep and some aspects of curriculum integration may also be resisted by noncollege-bound youth and their parents, who may fear that these reforms will limit opportunities for further education and training, and are merely vocational education under a new name.

3. Workplace learning, increasingly viewed as a critical component of programs for improving students' transition from school to work, will succeed only if business and industry become full partners.

Ten years ago there was little interest in work-based education. Even today, despite the considerable sums spent by corporations on remedial education, and the fact that business might gain more from participating in programs like integration and tech prep that include a workplace learning component, employers will not easily become involved in an elaborate system of work-based learning. There are several reasons for skepticism: First, with increasing amounts of work given to contract and temporary workers, corporations are unlikely to feel tied to the career of any worker, much less a future worker. Second, there are few financial or other incentives for employers in the U.S. to work with adolescents, who have a reputation as a particularly difficult age group. Third, unlike Germany or Japan, there is no history or culture of employer participation in education in the U.S. (Nor is work-based education an inexpensive solution to schooling, regardless of who pays. In Boston, where apprenticeships have been tried under Project ProTech, the annual cost per pupil for administration, support staff and curriculum development is $1,400 above the cost of regular schooling, and this does not include wages paid by the employer.) Fourth, in order to provide integration and prep tech programs nationwide with workplace components, an enormous number of companies would have to become involved in job training. According to one estimate, to train merely a quarter of those students who do not go on to college, one out of three companies would have to participate. Fifth, presumably few employers will be willing to be told by educators how they should structure their jobs to be more educational, how they themselves might be better supervisor/mentors, or which students they should employ. Finally, organized labor has resisted youth apprenticeships and other forms of job training, in part because they are seen as threatening to adult workers and as creating low-wage jobs at a time when jobs for adults are scarce, and in part because unions are doubtful that much training will actually take place.

For educators, two kinds of quality issues are raised by work-based learning. The first is how to describe and measure the quality of any job training. Research has shown that students are very discriminating about what constitutes a good work experience, and only good experiences are of use in increasing students' skills or their persistence in school. The second is how to exercise quality control in the work situation, either through professional development for employers, or monitoring jobs. Although educators have been reluctant to demand too much of employers, they should establish standards for student employment situations—and make these standards clear, including what it will cost to the employer—before they become involved in the program.

Not surprisingly, part of the resistance to work-based learning has been not from employers but from schools, which have had little experience creating long-term relationships with other institutions. Two approaches to improving the connections between schools and business, as well as the quality of work-based experiences, might be to bring teachers into the workplace in summers, and to enable workers to teach in the schools.

Given the problems of work-based education, some integration and tech prep activists are wondering whether and how the behavioral, cognitive, and motivational goals of these programs might be reached without a high-quality work component. One possibility is for schools to offer a greater variety of learning situations. Unfortunately, the physical facilities of secondary schools are generally inflexible; while they can be made conducive to group work, they are not easy spaces in which to simulate the workplace. Yet here, too, new possibilities arise. Secondary schools can be located in an industrial site. This would allow for different kinds of work spaces, while at the same time it would make possible connections between schools and industry, including the use of workers as teachers.

4. For integration and tech prep to demonstrate success, new kinds of standards and new tools for evaluation must be developed.

There is a growing national consensus that the only way to improve schooling (regardless of the area of reform) is to create new standards and measures by which to drive and evaluate the change. That is, any attempt at measuring outcomes must go beyond both the grades given by isolated teachers and the standardized tests that separate assessment from instruction. It must move toward concrete, authentic, or "real-life" ways to describe and measure change in both schools and students.

In integration and tech prep, the attraction of proposals for new standards and measures has been their promise of linking education more directly to what communities and industries believe that students should learn. The Perkins Act of 1990 requires states to develop their own system of standards and measures as part of their accountability. Performance measures must be created in at least two areas: academic achievement and either occupational competencies, employment

skills, retention in school, or placement in further education, the military, and employment. However, at last count only 40 percent of all states currently have any evaluation program in place.

In fact, evaluation has been a weak link in both integration and tech prep. This is due to a lack of expertise and appropriate ready-made tests, to uncertainty about the goals of integration and tech prep, and to the multiple aspects of both the programs and students' performance that might well be evaluated. The success of either integration or tech prep might, for example, be measured by performance at the individual, group, or school level; moreover, the assessments used might be geared to show achievement in a moment in time, or to indicate improvement through time as the system itself improves.

Although many educators are searching for new forms of evaluation and assessment to measure progress at work as well as in school, problems are still caused by inappropriate assessments, performance measures, and standards. In addition, outcome measures have been limited by their focus on short-term results. For example, studies of workplace education programs commonly evaluate youth 90 days after completing the program, although it is probably much more important to understand what happens to students five or more years later.

Two issues in particular need to be resolved in order to create effective evaluations of student gains in the programs: generally, how to implement authentic assessments, and more specifically, how to certify or reward students for career-based study.

Authentic assessments include a variety of techniques based on real projects and problems. Occupational issues and examples provide one obvious source of such projects and problems, although not the only one. Since schools are only occasionally real workplaces, testing and measurement specialists are trying to develop ways of assessing students' work through simulations and scenarios. Although involving vocational educators and business representatives in the development of assessments may help make them more "real," it may still be difficult to have truly realistic occupational issues incorporated into school-based assessments.

Because a high school diploma is no longer meaningful to employers, assessments must also indicate students' cumulative learning, particularly in the generic skills that are essential to successful performance in the workplace. However, the creation of certifications based on employment skills learned either at school or on the job involves several problems. Chief among these is timeliness: in a job world in which skills are continually shifting, the skills measured must be broad enough to make sense over time. This means that skills standards need to be continually revised, and schools must counteract their tendency to be ten or twelve years behind marketplace demands. Skills that have recently emerged as part of high performance workplaces—and which schools have been slow to teach—include the capacity for team work, adaptability and flexibility, decision-making, and self-regulation.

5. New strategies for professional development must be created to support these reforms.

To integrate academic and vocational education, teachers must take on new roles. Yet, teachers are no different from any other group in their tendency to stick to the comforts of habit in their isolated classrooms, and many will resist the changes that integration and tech prep bring. In fact, while teachers' notions of work and work education have traditionally been individualistic, occupation-specific, and skills-dominated, these reforms call for cooperation and collaboration.

As important, the professional development of teachers has traditionally been fragmented and intellectually shallow, based largely on a training paradigm of clearly defined practices, skill learning, and skill transfer. This paradigm, and its delivery system in inservice education, the workshop, may work reasonably well to introduce those reforms that are "technical" or can be rendered as a "cookbook" of classroom practices. However, the present reforms do not lend themselves to such rote, step-by-step training. Instead, these reforms require that professionals grapple with broad principles like problem-solving, and that they reflect such principles in their own practice, focusing on the "cultures of practice" that are demanded by different professional arenas.

For all this, teachers need to be given an adequate opportunity to learn (to experiment, consult, and evaluate), embedded in the routine organization of their work days. Thus, professional development must move from workshops to teacher collaboratives, team-based mini-grants, school-university partnerships, networks, and a variety of other supports for change. That is, the most effective way of helping teachers move toward integration is through creating and supporting a "grassroots" movement in which the teachers themselves begin with their own cooperative efforts, breaking down departmental barriers and planning together. Collaborative efforts among teachers will also lead to teachers asking for participation from business, as well as for people and resources from the community. All this can be made easier when administrators promote team-building activities, as well as understand and support the "risk-taking" of teachers inside their classrooms.

It is also important to recall that professional development for teaching an integrated curriculum does not occur in a vacuum. Rather, strains or supports from other allegiances and obligations can work against or shore up any professional development effort. By training and tradition teachers are deeply rooted in their subject matter and departments. They may see integration as threatening their expertise, cutting into their domain, and watering down their subject with vocational (or academic) material. In addition, many teachers and administrators are not convinced that major changes in curriculum and instruction are indicated, or they believe that these changes are needed only for "at risk" students. Teachers may also have little idea of how an integrated classroom would look, and it will be hard for them to begin change without a vision of where they

are going. All of these obstacles can be met if there are adequate supports and resources for teacher change.

But change must occur in preservice teacher education as well. Preservice teacher education is engaged in its own set of reforms right now, and, although some of these reforms are compatible with integration and tech prep, they inadequately account for the emerging place of work-based education in schooling. Two strategies might be used to move teacher education institutions in this direction. The first is to directly engage teacher education reformers in a discussion of how teachers can be trained for a different teaching and learning environment. The second is to help a few public schools and a few teacher training institutions willing to move toward work-related education collaborate so that they can reform themselves in tandem.

6. Integration and tech prep change guidance and counseling practices in the schools through the curriculum, altered counselor roles, and greater involvement of other school staff and outsiders.

Though mandated as components of integration and tech prep by the Perkins Act, guidance and counseling services have been the most underdeveloped aspects of these reforms. In part this is because guidance and counseling is a young profession, one ironically that grew out of the move of schools to provide vocational education to immigrant and other students who were to enter work directly from school. Over the years, however, most guidance and counseling services have been directed to college-bound students, assisting them in finding four-year colleges, or to troubled children and youth, helping them avoid academic failure or negotiate a personal or family crisis. These days, most students headed for work or a community college rarely see anyone from the guidance and counseling offices. Career planning advice and help is scarce in most schools, not only because there are few counselors present to offer it, but also because support for career development—and development generally—has not been a significant responsibility of the overburdened counselor, and few understand what is involved in work-related education or have been well-trained to provide this career-development support. Thus, to be successful, the reform must include professional development for counselors to help them design better services for students, not only through special workshops but in their preservice training and through incentives and opportunities for collaboration with the instructional staff implementing tech prep and integration programs.

Career development is not just a guidance function: it is a core educational outcome. Work-related education expands the responsibility for developing students' sense of careers, embedding it in the curriculum. Thus, it becomes part of the fabric of the whole school experience and the responsibility of many staff members. In the same way that all academic counseling and course work should prepare college-bound students to enter four-year colleges, integration and tech prep can reform high school guidance and counseling for students preparing to

enter community colleges and the workplace. In fact, this expanded vision of counseling would obviously also help college-bound students. However, unlike precollege counseling, career development not only engages more professionals and other adults, but it diversifies the number of situations in which it can occur—in formal counseling events, informally through the basic curriculum as well as in special career-related curriculum and student classroom exercises, through special mentoring programs, in school-based careers offices, and in the workplace, to name a few. While counselors work with students in educational planning and career awareness and exploration, teachers take on new counseling roles; moreover, employers and other adults who may have informal contacts with the youth as mentors take on guidance responsibilities.

Unfortunately, there is no precedent or model for coordinating such a career development program. The idea of guidance counselors working with teachers and non-school adults in the school, in the community, and in the workplace is entirely new. Counselors and teachers are likely to see this as yet another responsibility, but one which does not even have the urgency of, say, drug education. Moreover, they need a different preservice education and different inservice experiences to feel qualified.

Finally, to make career development a successful part of schooling, current psychological and sociological theories of this path of development must be integrated and brought to bear. Most theories of career development, for example, do not combine the cognitive explanations of how students mentally represent careers with theories of identity formation, developmental stages, and motivation—the more purely affective dimensions of career development. Nor do they take into account the influence of conditions in the real world on students' hopes and expectations.

7. Both integration and tech prep can be either facilitated or hindered by the policy and political environment in which they are implemented.

The fact that both integration and tech prep have developed in a policy environment where Federal regulations are purposely vague has created both opportunities and problems. While in the best case, this regulatory vacuum has allowed for local initiative, in many instances schools and districts have taken the line of least effort, making only those changes that meet the letter of the law. Most obviously, Perkins money has often been used to initiate articulation agreements between high schools and community colleges without creating any curricular or structural reforms, to reform areas of high school curriculum without making related changes at the college level, or to purchase "off-the-shelf" curriculum materials of unknown value.

At the Federal level, integration and tech prep have also been added to an already fragmentary system of vocational education programs, including the JOBS program, the Jobs Training & Placement Act, and the military. Some of these

programs may be contradictory or overlapping, and there are likely gaps which might be filled if there were more coordination of these programs.

At the state level, in the absence of Federal regulation and monitoring of Perkins, there has been great variety in the implementation of Perkins guidelines. While some states have invested their own resources, providing technical assistance to local districts, other states have left the administration of the reform entirely to the local level. A number of states are also experiencing problems as a result of conflicting educational policies. For example, while some state departments of education are adopting a work-based curriculum, they are still mandating hours of instruction in particular subjects, dictating rigid requirements for graduation, or demanding standardized tests, all of which are sure to prevent most school personnel from fully implementing the reform.

Finally, the curricular and organizational changes intended by integration and tech prep challenge a number of deeply entrenched structures of secondary education. Most important is the division of schooling into subjects, which is supported by teacher licensing arrangements. If these reforms are to succeed, such national testing and curriculum groups as the College Board, the national councils of academic subjects, and the National Center for Curriculum Coordination, must all support the principles of integration and tech prep.

Other problems arise from a lack of local funds, which often limit the amount of released time available to teachers for planning, as well as from rigid union contracts, which prohibit teachers from working with each other after class hours.

THE NEXT STEPS

Communicating the vision of curriculum integration and tech prep.

It has been difficult to convey the radical nature of school transformation that an integrated curriculum and tech prep represent. Many educators still see these reforms as a way of vocationalizing academic education, or as yet another attempt at career education. One problem is that the policy instrument for supporting these reforms has been the Perkins Act, which is vocational education legislation. The pressing need to educate students who may not be going on to four-year colleges for jobs, particularly in high-tech industries—a need which these reforms hope to meet—has also blinded many educators to the promise of these reforms for all schools and for all students. The problem of communicating integration and tech prep as fundamental change will only be solved when it has been convincingly demonstrated that these reforms work for any schools and *all* students. This will require a number of studies of a variety of carefully executed projects.

Linking integration and tech prep to other reforms.

Like most reformers, advocates of integration and tech prep have become somewhat insular and have not linked their goals to those of other current

educational reforms, especially those for changing urban schools. Yet the content and pedagogy in integration and tech prep have much in common with reforms currently being undergone in academic subject areas. For example, the National Council of Teachers of Mathematics has created standards and curriculum guides that emphasize contextualized learning. Other disciplines are following suit. When integration and tech prep advocates can show the ways in which work-based learning shares the goals and strategies of other reforms, they will more likely overcome the resistance to building work-related education into the very structure of public schooling.

Demonstrating how students can profit from good integration and tech prep programs.

Many experts suggest that situated, activity-based instruction is the best learning condition for all students—that, since Dewey, this kind of instruction has, in fact, been considered good teaching and learning. However, until now no research has analyzed just how well different students achieve under these conditions or whether all learning should be activity-centered. Students have different ways of learning; it very well may be that some of them need more didactic, teacher-centered instruction. Moreover, not all learning can come through group work and activities and projects; some work has to be independent, reflective, and with words. There is a particular danger that group work and activity-centered learning can easily become devoid of content in classrooms with students who are considered poor learners or vocational and general track students, non-English-speaking students, and special education students. We particularly need research to learn more to help us know which of these groups of students need special pedagogies, school organizations, or student services if they are to succeed in integration and tech prep.

In addition, we need to look beyond the high school. Much of the work on integration and tech prep has been done to reform the high school. However, in order for these reforms to succeed, curriculum and instruction may need to be altered in the middle school, and even at the elementary school level, as well as in postsecondary institutions.

Creating a new system of assessment and credentialing.

The lack of a system of assessment and credentialing of work-based education has created uncertainty about what students in integration, tech prep, or apprenticeship programs actually learn. Traditional instruments tend to mismeasure the accomplishments of these students; moreover, the lack of analyses about the content of the courses they take has led to inefficiency and duplication in course offerings.

The College Board, a quasi-governmental agency, regulates the curriculum

and assessment of the top 25 percent of students, those who are college bound. However, there has been no single institution to organize standards, curriculum, assessment and credentialing for the other 75 percent. The current legislative proposal for a National Skills Standards Board is one attempt to create a more coherent national system for credentialing those who intend to go to work directly after graduation from high school or community college. However, despite the wave of national enthusiasm for standards, the process of creating such a board will of necessity be very complicated and political. Among the more critical problems to be resolved are: how to integrate the plethora of existing credentialing systems into a national system; how to make this system flexible enough to respond to changing skills requirements; and how to arrive at an acceptable definition of the many occupations and industries.

Developing new and possibly collaborative forms of research.

Although there is a growing body of research on both integration and tech prep, there are still too few formative as well as summative studies. For example, no research describes what classrooms and schools look like in the early stages of change, and no measures have been developed that might be used as indicators of success at these early stages. In addition, there is little ethnographic research either on classrooms, which could guide pedagogical and curriculum changes, or on the workplace, which might inform quality control of student job placements. There is also scant research on the learning demands these programs make on teachers, administrators, counselors, and others, as well as on how existing training programs in vocational education, which reflect both old and new ideas, work together.

Most importantly, many are coming to believe that the traditional separation of research and practice may not be useful in learning about process issues in integration and tech prep. Instead, a useful model for research might be one that blurs the boundaries between research and technical assistance, making professional development a part of all site-based research designs.

Clarifying the possibilities of the workplace as an instructional site.

To better ground integration and tech prep, a clearer picture of the workplace is essential. Two issues, in particular, need to be clarified. First, what are the complicated, and diverse, changes occurring in various sectors of industry? Second, how, if at all, can schools rely on the workplace as part of their educational program? Questions of providing incentives to employers to become involved in integration and tech prep need to be resolved, as do issues of regulation and quality control on the job. Answering these questions should provide a more realistic vision about how much schools can rely on business and industry to participate in these reforms. It may be that there are ways to use the

workplace without making it an equal educational partner. However, it may also be that integration and tech prep should cease trying to make the workplace a center for learning and attempt instead to make the classroom more like the workplace.

Creating a supportive policy environment.

Future policies at the national, state and local levels must ensure that there are structures for planning, curriculum, technical assistance, and accountability. All of these changes need to be supported by dollars, policies, and regulations. This means that the Federal government, through Perkins and other vehicles, must exert a stronger role as states work up their individual plans, and that states must similarly exert a stronger role as local districts produce their plans. Policy at both the state and Federal levels must also be more integrated; that is, both levels should attempt to coordinate legislation so that the various reforms already on the books and being instituted support each other. Finally, incentives and financial support for technical assistance must be increased at both the Federal and state levels.

A cautionary note.

Curriculum integration and tech prep are promising educational reforms, and much of what we have said here reflects that promise. But in practice these programs vary greatly in quality, depth, links to work, and so forth. This is partly due to the barriers we discuss, and is a characteristic of a nascent reform, but it also reflects different commitments to implementing these reforms seriously. History has made it clear that educational reform requires will and effort, as well as policy instruments and professional tools, if it is to succeed.

SUMMIT PARTICIPANTS

ADELMAN, Nancy
Policy Studies Associates
1718 Connecticut Avenue, NW
Suite 400
Washington, DC 20009

ARING, Monika
Education Development Center, Inc.
55 Chapel Street
Newton, MA 02160

ASCHER, Carol*
Institute on Education and the Economy
Teachers College, Box 174
Columbia University
New York, NY 10027

BAILEY, Thomas*
Institute on Education and the Economy
Teachers College, Box 174
Columbia University
New York, NY 10027

BENSON, Charles*
University of California, Berkeley
1995 University Avenue, Suite 375
Berkeley, CA 94704

BODILLY, Sue*
RAND Corporation
2100 M Street, NW
Washington, DC 20037-1270

BOESEL, David
Office of Educational Research Improvement
555 New Jersey NW, Room 622
Washington, DC 20001

BRADBY, Denise
Management Planning and Research Associates, Inc.
University of California, Berkeley
1995 University Avenue, Suite 225
Berkeley, CA 94704

BRAGG, Debra*
Department of Vocational and Technical Education
345 Education Building
University of Illinois
Champaign, IL 61820

BROWN, Cynthia
Budget Examiners, Education Branch
Office of Management and Budget
Room 7236, 725 17th Street, NW
Washington, DC 20503 CASTALDI, Ron
U.S. Department of Education
4201 17th Street, NW
Washington, DC 20011

CLOWES, Darrel*
College of Education
Division of Curriculum and Instruction
318 War Memorial Hall, Virginia Polytechnic Institute and State University
Blacksburg, VA 24061-0313

DAINES, Jim*
Department of Vocational and Technical Education
R350 Vo Tech Education Building
University of Minnesota
1954 Buford Avenue
St. Paul, MN 55108

*Researchers of the National Center for Research in Vocational Education.

ELLIBEE, Margaret*
University of Wisconsin
344 West Dayton Street, #2R
Madison, WI 53703

FAULKNER, Susan*
College of Education
Division of Vocational and Technical Education
112 Lane Hall
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061-0254

FLAXMAN, Erwin*
Institute on Education and the Economy
Teachers College, Box 174
Columbia University
New York, NY 10027

FRIEDERICH, Jackie
U.S. Department of Education
330 C Street, NW
Room 4512, Switzer Building
Washington, DC 20202-7242

GROFF, Warren
1531 Peabody Avenue
Memphis, TN 38104

GRUBB, Norton*
University of California, Berkeley
Graduate School of Education
3653 Tolman Hall
Berkeley, CA 94720

HARPOLE, Greg
Office of Professional Technical Education
Oregon Department of Education
700 Pringle Parkway, SE
Salem, OR 97310

HARRIS, Kathy
3005 Sunset Drive
Bell Eire Bluff, FL 34640

HILL, Clifford*
Department of Languages and Literature
Teachers College, Box 66
Columbia University
New York, NY 10027

HOLLAND, Edward
Daul, Walker and Associates
818 18th Street, NW, Suite 820
Washington, DC 20006

MCCAREN, Belinda
Guidance Division
Oklahoma Vocational Technical
1500 West 7th Avenue
Stillwater, OK 70474

NEMKO, Barbara
5936 Shabolyn Terrace
Oakland, CA 94618

PARTEE, Glenda
Resource Center for Educational Equity
Council of Chief State School Officers
1 North Massachusetts Avenue, NW
Washington, DC 20001-1511

PENNINGTON, Hillary
Jobs for the Future
1815 Massachusetts Avenue, Suite 306
Cambridge, MA 02140

PHELPS, Alan*
Center on Education and Work
964 Education Sciences
1025 West Johnson Street
Madison, WI 53706

*Researchers of the National Center for Research in Vocational Education.

PORTER, John
Oroville Unified School District
2211 Washington Avenue
Oroville, CA 95966

REID, Mark*
National Network for Curriculum in Integration and Tech Prep
3653 Tolman Hall
Berkeley, CA 94720

SCHMIDT, June*
College of Education
Division of Vocational and Technical Education
112 Lane Hall
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061-0254

STACEY, Nevzer
Office of Educational Research and Improvement, Department E
555 New Jersey Avenue, NW, Room 615
Washington, DC 20208

STASZ, Cathy*
RAND Corporation
1700 Main Street
Santa Monica, CA 90407-2138

TAKAI, Ricky
Office of Vocational and Adult Education
U.S. Department of Education
400 Maryland Avenue, SW
Room 4090-MES
Washington, DC 20202-7100

WARREN-LITTLE, Judith*
University of California, Berkeley
3653 Tolman Hall
Berkeley, CA 94720

WILKENS, Parisee
U.S. Department of Education
330 C Street, SW
Room 4512, Switzer Building
Washington, DC 20202-7242

WIRT, John
Office of Technology Assessment
Science, Education, Transportation
600 Pennsylvania Avenue, SE
Washington, DC 20510-8025

ZUCKERMAN, Allen
National Youth Employment Collaboration
1001 Connecticut Avenue, NW, Suite 301
Washington, DC 20036

*Researchers of the National Center for Research in Vocational Education.

Additional copies of this report are available for $5.00 pre-paid from IEE Publications, Institute on Education and the Economy, Teachers College, Box 174, Columbia University, New York, NY 10027. For further information about the IEE, please call (212) 678-3091.